California Environmental Protection Agency

Air Resources Board

Low Carbon Fuel Standard Update

July 25, 2014

LCFS Update

- Brief History
- Current Status
- Proposed Re-adoption with Amendments
- Proposed Timeline

Original LCFS Adoption

- Board originally approved LCFS regulation in 2009 as a discrete early action measure under AB 32
- Goal: Reduce carbon intensity of transportation fuel pool by at least 10% by 2020
- Expected Benefits
  - Help achieve AB 32 objective of reducing GHG emissions to 1990 levels by 2020
  - Transform and diversify fuel pool
  - Reduce petroleum dependency

LCFS is Part of Fuels Portfolio

- Transportation sector responsible for:
  - 40% of GHG emissions
  - 80% NOx emissions
  - 95% PM emissions
- LCFS is part of portfolio to address emissions from transportation sector including:
  - Cap-and-Trade Program
  - Advanced Clean Car Program
  - SB 375

LCFS Complements Cap-and-Trade

- Cap-and Trade provides a hard limit on economy-wide GHG emissions while providing individual entities compliance flexibility
  - Fuels under the Cap ensures all sectors and technologies are treated equitably
  - Incentivizes all major pollution sources to account for and reduce their emissions
- Achieving our GHG and air quality goals requires major reductions from transportation sector
  - LCFS incentivizes fuel diversity through investments in clean, low-carbon, renewable fuels
  - Clean fuels count towards compliance under both programs

LCFS Key Requirements

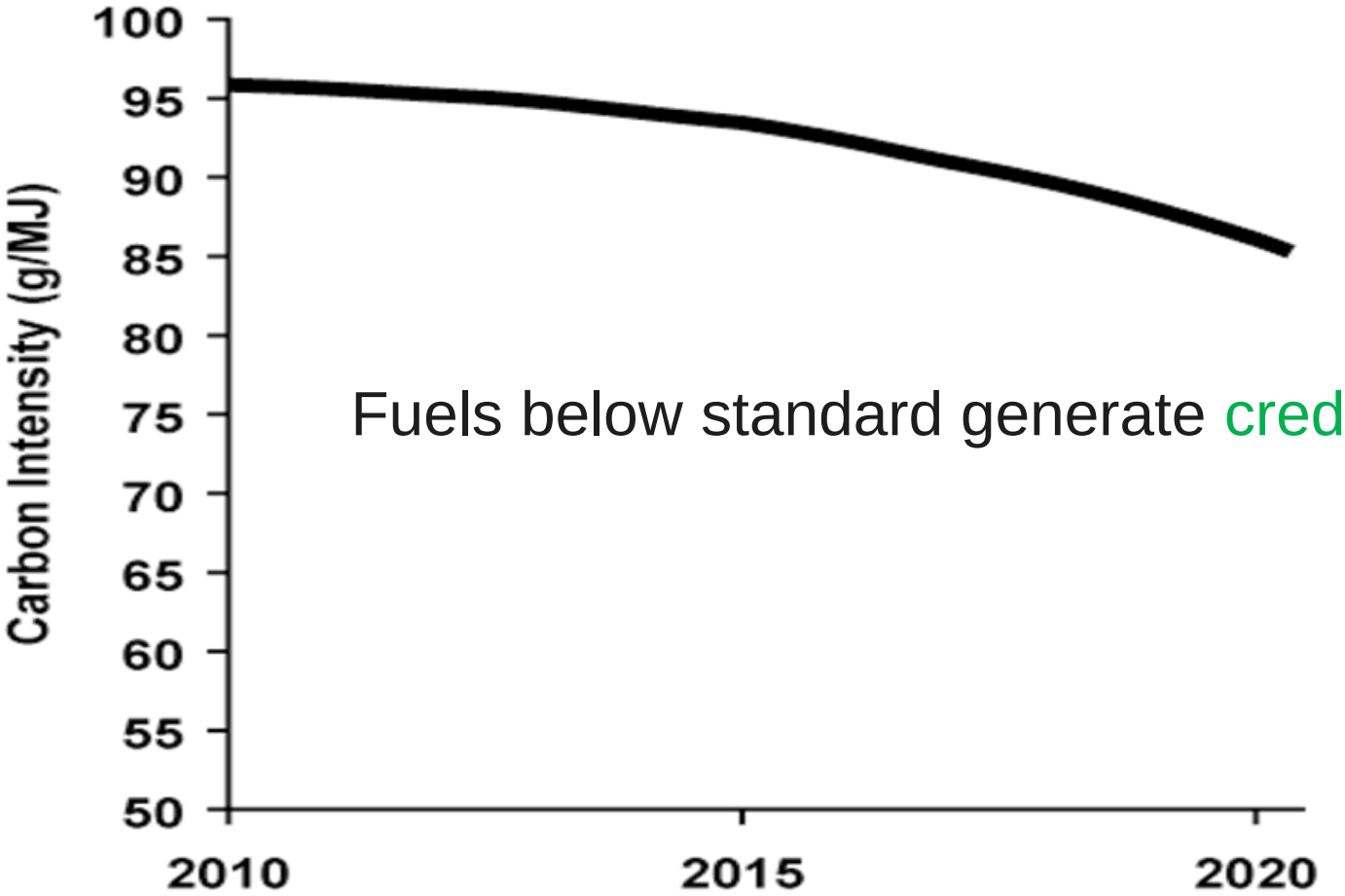
- Sets annual carbon intensity standards for transportation fuels (e.g., gasoline, diesel)
- Carbon intensity (CI) is the measure of GHG emissions associated with producing, transporting, and consuming a fuel (gCO_2e/MJ)
- CI based on complete life cycle analysis

Features of LCFS

- Providers in California of most petroleum and biofuels are “regulated parties” under the LCFS
- Providers of clean fuels that already meet 2020 target are exempt but can “opt in” to program and earn credits
  - Electricity
  - Hydrogen
  - Natural gas & biogas
- Generated credits can be bought and sold by regulated parties

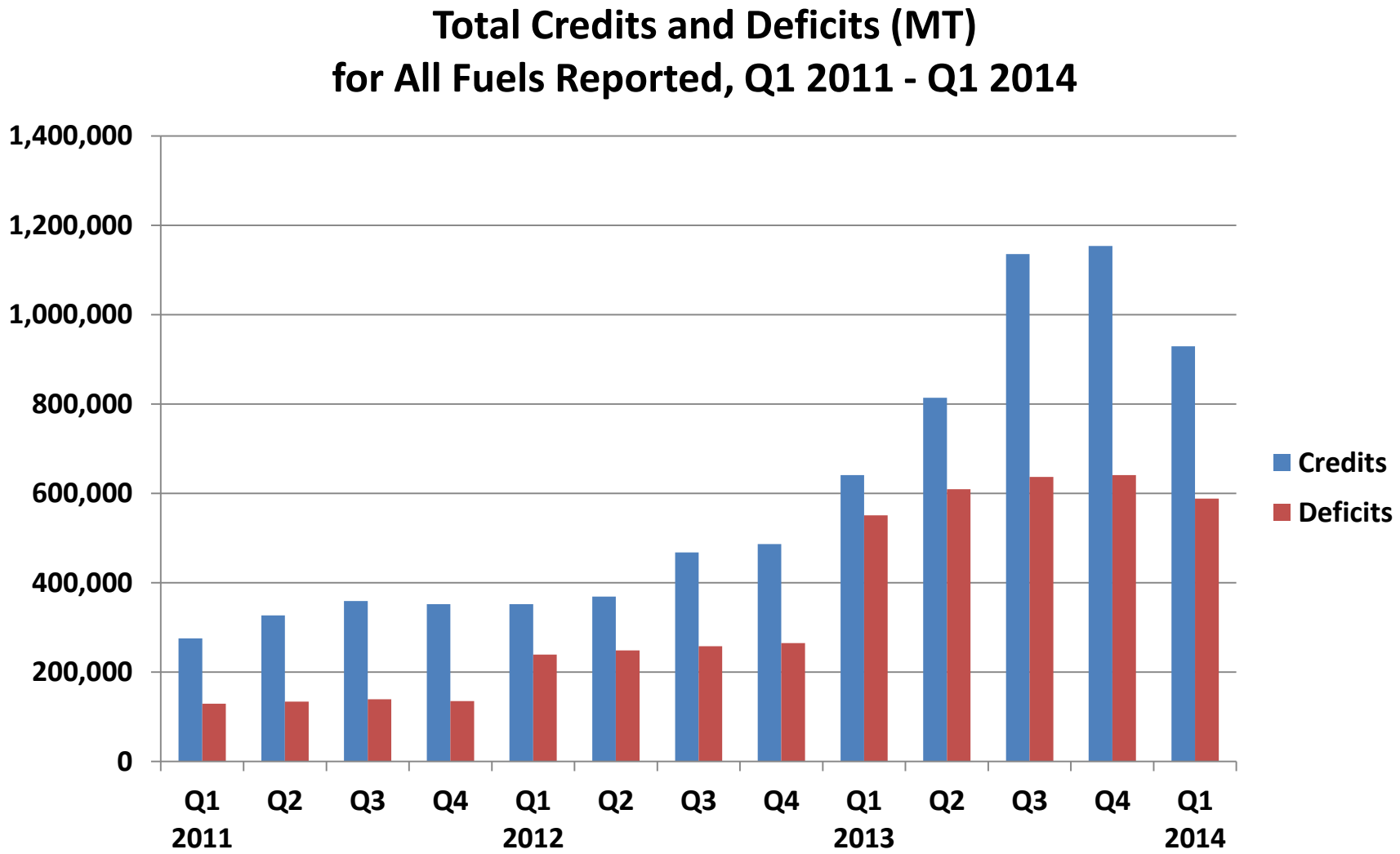
LCFS Accounting System Straightforward

Fuels above standard generate deficits

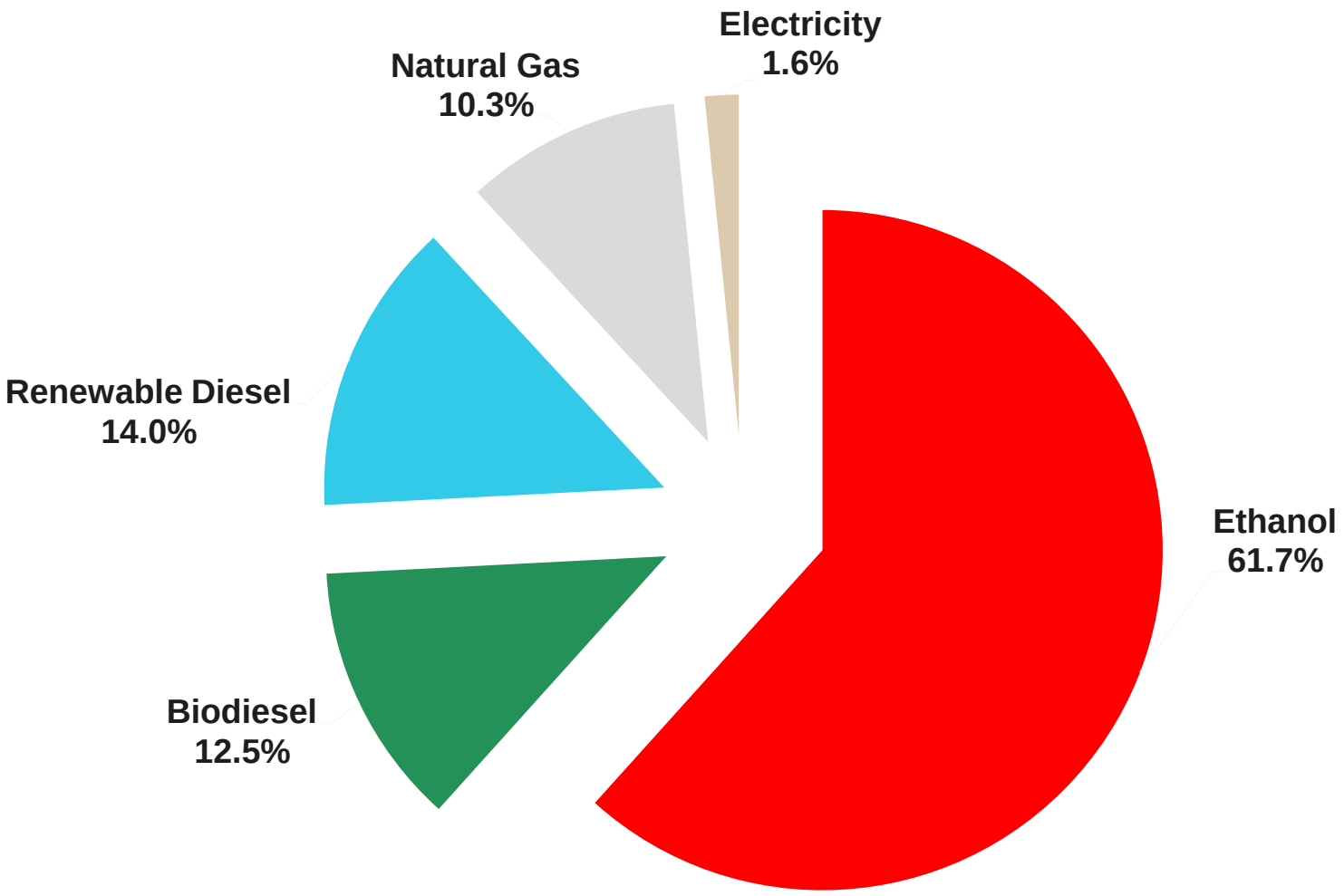


Fuels below standard generate credits

Industry Over-complying



LCFS Credits



Sources of credits through Q1 2014

LCFS Credit Market

- *Only* LCFS regulated parties can generate and trade credits
- 81 entities participating in the credit market
- 345 credit transactions
  - 226 LCFS credit transactions in 2012 and 2013
  - 119 LCFS credit transactions through June 2014
- ~ 1.5 MMT credits traded
  - Price range: $10 – $85/MT
  - Trade volumes: 3 – 91,000 credits/trade

LCFS Lawsuits

- **Federal: 9th Circuit Court of Appeals**
  - Rejected several constitutional claims
  - Returned case to district court for additional determinations
  - U.S. Supreme Court denied plaintiffs' request for review
- **State: 5th District Court of Appeal**
  - Found procedural issues with CEQA and APA
  - Rejected plaintiff's request to invalidate LCFS
  - Allowed ARB to enforce program while addressing court's concerns
  - The Board will consider an alternative diesel fuel (ADF) regulation and a re-proposed LCFS in early 2015

Context of Biodiesel to LCFS

- 2009 LCFS rulemaking acknowledged need to investigate and address potential NOx increase from biodiesel use
- Court ruled ARB's commitment to address NOx was not sufficiently specific under CEQA
- ARB will propose measures controlling NOx in concert with LCFS re-adoption, as a result of potential NOx increases

Alternative Diesel Fuel Regulation

- Initial studies - B5 does not increase NOx
- Recent data show a NOx impact at B5 for certain vehicles and feedstocks
- Regulation will ensure no adverse NOx impacts

Biodiesel vs. Renewable Diesel

- Derived from similar feedstocks, but different production processes
- Chemically, biodiesel is an ester, renewable diesel is a hydrocarbon indistinguishable from diesel
- Biodiesel increases NOx but reduces PM and other pollutants
- Renewable diesel reduces NOx, PM, and other pollutants, and can be used to mitigate NOx increase from biodiesel

2015 LCFS Proposed Re-Adoption

Developing a package of proposed amendments to improve the LCFS

- Per Board's direction on many amendments
- To be responsive to stakeholder feedback
- For clarity and enhancement of the regulation
- Lessons from four years of implementation

Developing Amendments to Improve LCFS

- Preserve basic flexible framework of current LCFS
- Compliance
  - Revise post-2015 compliance curves
  - Include cost-containment mechanism
- Crude/Refinery
  - Amend some crude oil provisions
  - Recognize GHG reductions at refineries
  - Address low complexity – low energy use refineries

LCFS Improvements (Cont.)

- Enforceability
  - Streamline fuel pathway analyses
  - Enhance and clarify enforceability
- Update indirect land use change values
- Recognize additional electricity credits: mass transit & forklifts

LCFS Partnerships - Pacific Coast Action Plan

Signed by California, Oregon, Washington, and British Columbia

- Over time, build an integrated West Coast market for low-carbon fuels
- Staff has been routinely working with these jurisdictions

2014-2016 LCFS Timeline